



County of Los Angeles
INTERNAL SERVICES DEPARTMENT

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"To enrich lives through effective and caring service"

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June 29, 2016

To: Supervisor Hilda L. Solis, Chair
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Don Knabe
Supervisor Michael D. Antonovich

From: Dave Chittenden
Chief Deputy Director

A handwritten signature in blue ink, appearing to read "D Chittenden", is written over the printed name and title.

BOARD MOTION OF JUNE 30, 2015, ITEM NO. 2 – REPORT ON CLEAN FUEL SUSTAINABLE FLEET POLICY AND FEASIBILITY OF INCREASING CLEAN FUEL VEHICLE PURCHASING REQUIREMENTS

On June 30, 2015, your Board instructed the Director of Internal Services (ISD), working in conjunction with the Chief Executive Officer (CEO), the Sheriff, the Fire Chief, and the Director of Public Works, to submit a report to the Board by July 1, 2016, that provides details on non-emergency vehicle purchase in the fleets managed by ISD, the Sheriff's Department, the Fire Department, and the Department of Public Works. The report should include details on overall fleet composition and performance against the 10 percent clean fuel vehicle purchasing requirements included in the Clean Fuel-Sustainable Fleet Policy.

Additionally, your Board instructed the Director of ISD to include a recommendation for and a feasibility analysis of increasing:

- a. The Transitional Zero Emissions Vehicle (TZE⁽¹⁾) and Zero Emission Vehicle (ZEV)⁽²⁾ purchasing requirements for non-emergency passenger sedans from 10 to 20 percent.
- b. The alternate fuel vehicle purchasing requirements for light duty trucks and vans from 10 to 20 percent.

This analysis should reflect and/or include:

1. Recent fleet acquisitions.
2. Customer and departmental feedback on the use of TZE⁽¹⁾s, ZEVs, and alternative fuel trucks and vans, including any operational impacts experienced.

(1) TZE⁽¹⁾ refers to Plug-in Hybrid Vehicle (PHEV) gas and electric plug-in such as Ford C-max and Fusion.

(2) ZEV refers to all electric such as Nissan Leaf.

3. Expenses related to charging or refueling infrastructure for additional TZEV, ZEV, and alternative fuel vehicles.
4. An inventory of available local, State and Federal grants and subsidies available for the purchase of TZEV, ZEV and alternative fuel vehicles and/or charging and refueling infrastructure and a report on departments' ability to secure these resources.
5. The potential for reduced gasoline consumption and CO₂ emission from a higher purchasing requirement.
6. A comparative analysis of TZEV, ZEV, and alternative fuel vehicle purchasing requirements in peer governmental agencies, including cities and counties.

Executive Summary

Overview

The following is a summary of responses to the above referenced instructions provided by your Board, with the report detail contained in Attachment I.

Please note that each departmental fleet organization has participated in this effort by providing its vehicle fleet data, and input to each aspect of this review and analysis.

Fleet Composition and Compliance

The County vehicle fleet consists of 10,822 light duty vehicles, of which 7,520 are classified as non-emergency. Attachment II provides details by County fleet and clean fuel vehicle categories.

Overall, the County is currently at 14 percent compliance with clean fuel vehicles. This is attributable to the number of hybrid sedans in the County fleet.

Recent Fleet Acquisitions

For Fiscal Year 2016-17 (through mid-June 2016), 17 percent of sedans that were purchased were TZEV, eight percent of vans were Compressed Natural Gas (CNG), and two percent of trucks were CNG.

Departmental Feedback

Since 2006, the County standard for non-emergency sedans has been the hybrid gas-electric vehicle.

TZEVs are quickly becoming popular vehicles in County operations as well for non-emergency sedans due to following factors according to County departments:

- State rebates which defray the incremental costs of TZEVs compared to standard hybrids
- Extended range of TZEVs compared to ZEVs
- Vehicle comfort
- Technology features

However, departments are concerned that the current Electric Vehicle Supply Equipment (EVSE) charging infrastructure is insufficient to support the County's present inventory or the growth of TZEVs. The lack of EVSE units or the lack of enough EVSE units at County facilities defeats the purpose and benefits of purchasing and utilizing TZEVs.

The ZEVs are not yet recommended for countywide adoption until the driving range issue is addressed on reasonably priced ZEVs. However, departments are still encouraged to make use of ZEVs for niche applications such as campus-limited vehicles.

CNG Fuel Infrastructure

The County currently has one CNG fuel site, which is centrally located near the Civic Center, adjacent to the Alameda garage. This site is also open to other agencies and the public.

Due to the capital costs associated with building a CNG fuel site, in excess of \$1 million, County departments have relied on available public sites to fuel their CNG vehicles.

With only 42 public CNG sites across the County this can present operational and fueling challenges for departments. As a result, departments must assess planned locations for vehicle use in determining if CNG is a viable option and grant funding is desirable.

Peer Government Agency Practices

The State of California, cities and counties have varying policies and use a variety of strategies for cleaner air and greener vehicles. These can include not only setting targets for greener vehicles when replacing vehicles but also vehicle reductions for both civic operations and take home units.

Details on targets set by the State of California, the Cities of San Diego and Los Angeles, and other agencies are provided within the attached report. However, as you will note, targets range from 15 percent for alternative fuel trucks by 2017, to all sedans being replaced by ZEVs by 2030. Some also specify targets for the required infrastructure as well (e.g., 300 EVSE chargers by 2020).

Recommendations and Considerations

Based on the County fleet review and feasibility analysis conducted, the following considerations and recommendations are presented:

1. Increase Transitional Zero Emissions Vehicle and Zero Emission Vehicle purchasing requirements for non-emergency passenger sedans from 10 to 20 percent.

Recommendation – Not recommended unless or until sufficient infrastructure is established.

Increasing the purchasing requirement for sedans from 10 to 20 percent for TZEV or ZEV would be feasible if County EVSE infrastructure is also increased to support the increase of these vehicles to the County fleet. It does not appear, however that grant funding is a reliable source for the EVSE infrastructure.

2. Increase alternate fuel vehicle purchasing requirements for light-duty non-emergency trucks and vans from 10 to 20 percent.

Recommendation – Not recommended unless or until sufficient infrastructure is established.

Increasing the purchasing requirement for trucks and vans from 10 to 20 percent for CNG or other alternative fuels may not yet be feasible due to several concerns, such as, significant incremental vehicle costs, very limited CNG fueling sites, costs of CNG fueling infrastructure, County garage facilities are not equipped to service CNG vehicles, and limited options of CNG vehicles from manufacturers.

Conclusion

The County has made very strong progress to meet newly established purchasing goals for clean fuel vehicles. Budgetary support to replace vehicles with cleaner fuel vehicles is vital for departments to continue these efforts. Additionally, funding support is needed to provide required fueling infrastructure for plug-in vehicles and alternative fuels. ISD will work with CEO and County departments to examine potential funding and locations for EVSE infrastructure expansion.

If you have any questions regarding this request, please contact me at (323) 267-2103, via e-mail dchittenden@isd.lacounty.gov or Joe Sandoval at (323) 267-2109, via e-mail jsandoval@isd.lacounty.gov.

DC:JS:MN:mat

Attachments

c: ISD Deputies
Chief Executive Office
Executive Office, Board of Supervisors
Fire Department
Sheriff Department
Department of Public Works

ATTACHMENT I

REPORT ON CLEAN FUEL-SUSTAINABLE FLEET POLICY AND FEASIBILITY OF INCREASING CLEAN FUEL VEHICLE PURCHASING REQUIREMENTS

This report provides an update to your Board on the composition and clean fuels vehicle purchasing compliance regarding the overall County fleet, including that managed by the Internal Services Department (ISD), the Fire and Sheriff's Departments, and the Department of Public Works (DPW). It further provides feasibility analysis on increasing these purchasing requirements.

All departmental fleet organizations have provided vehicle fleet data and their input on each aspect of this review and analysis.

Overall Fleet Composition

The County vehicle fleet consist of 10,822, of which 7,520 non-emergency vehicles. Attachment II provides additional details on County's light duty fleet in two tables:

(1) Emergency vs. non-emergency vehicles by vehicle type and County fleet; and
(2) Clean vehicle categories by vehicle type and County fleet for non-emergency vehicles. As emergency vehicles are exempt from clean fuel purchasing requirements, the focus of the policy standards and this report are the non-emergency vehicles.

Overall, the County has 1,018 (14%) of 7,520 non-emergency vehicles currently meeting clean fuel standards. This is attributable to the number of hybrid sedans in the County fleet as a result of the change to Board Policy 3.020 in November 2005, which specified hybrid sedans as the standard County replacement vehicle for non-emergency sedans effective July 2006.

Feasibility Analysis

Below is the requested input from all departmental fleet organizations on the feasibility analysis items to be included for consideration of an increase to the purchasing requirements within the Clean Fuels-Sustainable Fleet Policy.

1. Recent Fleet Acquisitions

For FY 2015-16, ISD's Purchasing Division issued purchase orders for non-emergency, light duty vehicles for all County fleets as shown below. It should be noted that the data below could inadvertently include some emergency vehicles, if the vehicle purpose was not clearly denoted.

Type	Sedan	%	SUV	%	Truck	%	Van	%
Gas	44		30		127		121	
Hybrid	74	52%	-		-		-	
TZEV	25	17%	-		-		-	
CNG	-		-		2	2%	11	8%
Total	143	-	30	-	129		132	-

As of June 17, 2016

A portion of the accelerated purchases which were initiated during FY 2015-16 pursuant to a September 29, 2015 Board motion are assumed to be incorporated in the table shown above. Pending requisitions will continue to be processed as fiscal year end approaches.

The Fire Department purchased a total of 19 hybrid sedans for replacement of 19 non-hybrid sedans for FY 2015-16. Fire plans to purchase a minimum of 10 hybrid vehicles per fiscal year; this will be approximately 50% of their total non-emergency sedan purchases each fiscal year.

The Sheriff's Department purchased all five non-emergency sedans hybrids this fiscal year.

During FY 2015-16, DPW only purchased one sedan: a Toyota Hybrid Prius. Due to the limited sedan purchase this fiscal year, it was not able to meet the 10 percent purchase requirements for the light duty sedans. However in late FY 2014-15, DPW purchased three TZEVs, which were received in August and September of 2015. The combination of these most recent sedan purchases would have exceeded the 10 percent purchase requirement for sedans. For FY 2016-17, DPW plans on acquiring five fully dedicated electric vehicles (ZEVs).

Additionally, in the current fiscal year, DPW submitted their request to purchase eleven light-duty trucks. Two of the trucks ordered will be Compressed Natural Gas (CNG), which exceeds their 10 percent purchase requirement for trucks. Similarly, ISD submitted a request to purchase two CNG vans, and Parks and Recreation is purchasing three CNG vans.

It should also be noted that two CNG refuse trucks were purchased for Beaches and Harbors in late FY 2014-15, and were only recently received.

For reference at this time, the only SUV manufacturers offering TZEVs (currently in the form of PHEVs) are Mercedes, Volvo, and BMW. None of these current models would be appropriate for routine County operations.

2. Customer and departmental feedback on the use of TZEVs, ZEVs, and alternative fuel trucks and vans, including any operational impacts experienced

The County has just two on-road ZEVs that have been part of the County motor pool managed by ISD. Despite the ease of vehicle accessibility, these vehicles have not been widely adopted for County operations because of the range limitation. Since being placed in service more than four years ago, the average annual mileage is 2,517.

Until the range limitations are addressed on reasonably priced ZEVs, the ZEVs are not yet recommended for countywide adoption. However, departments are still encouraged to make use of ZEVs for niche applications such as campus-limited vehicles.

Alternatively, TZEVs are quickly becoming a popular vehicle in County operations due to State rebates to defray their incremental costs compared to standard hybrids; the extended range; vehicle comfort and technology features. Attachment III provides the survey results of motor pool users when TZEVs (e.g., Ford C-Max and Fusion) were newly added in March 2016. Overall, the survey results were very positive. The existing ZEVs (Nissan Leaf) were included as well despite its limited usage to short-range trips. An additional comment from a TZEV user was: *"I enjoy driving this vehicle. It is responsive and I feel safe driving on freeways and streets."*

Additionally, DPW reported they have not experienced any problems with the performance of the three TZEV plug-in Ford Fusions that they received in August and September of 2015. However, the daily charging of the TZEVs requires close coordination and planning which has impacted their motor pool operations to a small degree. See additional information from DPW on EVSE charging in #3 below.

Similarly, several County departments have stated that the current EV charging infrastructure is insufficient to support the County's present inventory growth of TZEVs. Insufficient EV charging infrastructure could result in underutilization of full TZEV vehicle benefits; lack of charging reverts a TZEV vehicle to standard hybrid vehicle operation.

It is important to note that the feedback provided above on TZEV is specifically referring to Plug-in Hybrid Vehicles (PHEV) although the term TZEV can also refer to H2 (hydrogen) powered vehicles. Although manufacturers have begun producing and marketing H2 (more commonly called fuel cell) sedans such as the Toyota Mirai, the

Honda Clarity Fuel Cell, and the Hyundai ix35 Fuel Cell, hydrogen fueling infrastructure is extremely limited.

Currently, there is one hydrogen fuel site in the County (West Los Angeles) that is fully functional, and there are four other hydrogen fuel sites with limited hydrogen fueling availability according to www.caafcp.org/sationmap. Additionally, these vehicles are cost prohibitive for routine County operations; costs exceed \$50,000 although the State of California offered a \$15,000 rebate for hydrogen vehicles in public fleets; funding is currently exhausted. Only limited testing of fuel cell vehicles is currently recommended.

Regarding CNG fueled vehicles, the County currently only has one CNG fuel site which is centrally located near the Civic Center, which is adjacent to the Alameda garage. This site is also open to other agencies and the public.

Due to capital costs associated with building a CNG fuel site, in excess of \$1 million, County departments rely on using available public CNG fuel sites to fuel their CNG vehicles. According to: www.cngprices.com/stations/CNG/CA, there are only 42 CNG fuel sites across the entire County, which can present operational and fueling challenges for departments. As a result, departments must assess planned locations for vehicle use in determining if CNG is a viable option.

Parks and Recreation currently has nine CNG heavy-duty trucks in service and has ordered two more heavy trucks and six vans which are expected to arrive by the end of the calendar year. To date, their experience with the heavy-duty CNG trucks has been the vehicles are underpowered, slow, inefficient and expensive. Additionally, the lack of alternative fuel trucks from manufacturers to meet some operational needs, such as crew cab, stake beds, and utility trucks, can make it difficult to meet the current clean fuel vehicle purchase requirements. Based on this experience and limits on available manufactured vehicles, the department stated it would have operational difficulty supporting an increase to the current 10 percent purchase requirement for alternative fuel (e.g., CNG) vehicles and plug-in hybrid percentages.

Beaches and Harbors recently acquired two CNG fueled refuse trucks which were placed into operations in late May 2016. These will provide the needed opportunity to test the use of these CNG vehicles in their departmental operations, which is mostly 4x4 beach terrain, and assess CNG refueling. Other forms of alternative fuels are not available to Beaches in their 4x4 beach environment. Department staff report that preliminary testing on beaches and beach parking lots have been very positive; they have yet to see if performance will be sustained with extensive use during peak season and have yet to experience and evaluate maintenance and repairs.

3. Expenses related to charging or refueling infrastructure for additional TZEV, ZEV, and alternative fuel vehicles

Although the costs of installation varies widely based on proximity to electricity and network connections, the standard cost to install a single EVSE charger is approximately \$7,500. ISD has established master purchasing agreements governing the procurement and installation of EVSE chargers. County departments may utilize the purchasing agreements to purchase and install EVSE chargers.

The Fire Department currently has no EVSE chargers. However, the installation of three EVSE chargers is in process for the LAFD headquarters. The EVSE chargers will accommodate the planned purchase of ZEVs beginning in FY 2016-17. Fire estimates the installation cost per single charging station will be no more than \$7,500.

DPW will be adding 17 additional charging stations at a total estimated project cost of \$84,000 which will be partially offset by a \$42,000 MSRC grant. The additional EVSE charging stations will be installed at the following sites:

- Headquarters Building – 5 additional that will be restricted to DPW use only
- Baldwin Park Yard – 3 replacing the old style chargers that are obsolete
- Imperial Yard – 3 replacing the old style chargers that are obsolete
- Westchester Yard – 3 replacing the old style chargers that are obsolete
- Longden Yard – 3 replacing the old style chargers that are obsolete

ISD will request \$125,000 in the FY 2016-17 supplemental budget to be used as matching funds for future EVSE infrastructure grant applications which should result in over 30 EVSE charger installations.

CNG fuel sites installations are a significant cost. A recent estimate for replacement and upgrade of our public Los Angeles CNG fuel site ranged was \$1.4 million with additional options increasing cost to \$1.6 million. Due to the significant cost of CNG infrastructure and the limited number of CNG Fleet vehicles, it was not cost effective to build additional CNG fuel sites. As a result, the current County CNG vehicles are either centrally located near our Alameda CNG fuel site or rely heavily on the limited number of available public CNG fuel sites.

To support their department conversion of medium and heavy trucks to CNG, DPW is initiating plans to install small CNG packaged fueling systems in two remote locations (Castaic and Malibu Yards) with no or very limited access to CNG in FY 2016-17 at a total estimated project cost of \$1.2 million. This equipment purchase was approved by Board of Supervisors on June 8, 2016. The cost of the equipment will be partially funded by MSRC grants for up to \$300,000 at each site (maximum total grant \$600,000). The grant requires that we allow other agencies to fuel at the site. Following Board approval, the equipment purchase will go out to bid and is anticipated to be installed sometime in 2017.

The equipment for DPW's Castaic/Malibu CNG fuel system involves installing a small package CNG fueling unit. The unit will have a compressor, dryer, storage tank of approximately 50 GGE's and several time-fill posts. The system will primarily focus on slow-fill of the equipment overnight but will have the ability for limited fast-fill in the event of an emergency and a vehicle had to get back on the road.

4. An inventory of available Federal, State and local grants and subsidies available for the purchase of TZEV, ZEV and alternative fuel vehicles and/or charging and refueling infrastructure and a report on departments' ability to secure these resources

Intermittently, Federal, State or local grants and subsidies become available which may help offset the costs of acquiring EVSE charging infrastructure or alternative fuel infrastructure. Currently, potential funding sources for these infrastructures are specified below.

CARB Clean Car Rebates

For vehicles purchases, the California Air Resources Board (CARB) offers a Clean Car rebates to public fleets serving disadvantaged communities. The rebate offers \$15,000 for a Fuel Cell Vehicle (FEV), \$10,000 for a Battery Electric Vehicle (BEVs), and up to \$5,250 for Plug-in Hybrids (PHEVs). The County successfully secured 30 Clean Car Rebates for 2015 totaling \$157,500 and has reserved the maximum number (30) Clean Car Rebates for 2016 prior to the exhaustion of funding for this program.

It is important to note that future funding is not available at this time. State lawmakers are currently discussing plans for the funding source for this program going forward.

Mobile Source Reduction Committee (MSRC) Grants

DPW is in the process of being awarded and seeking Board approval to accept two MSRC grants for CNG and EVSE infrastructure development as follows:

- Two (2) CNG package fueling stations (\$600,000 total grant funding)
- Seventeen (17) additional charging stations (\$42,000 total grant funding)

LADWP Charge Up LA

The Los Angeles Department of Water and Power DWP is offering a \$4,000 rebate for EV charging equipment installed within their servicing territory. DWP will require a separate meter for the chargers and will claim the Low Carbon Fuel Credits (LCFCs) associated with the electrical usage. DWP estimates that it will recoup the \$4,000 rebate in 1.5 to 6 years; the duration is dependent upon the usage and the value of

the LCFCs. The County should closely scrutinize the locations for which it applies for rebates. If the County were to determine that an individual site would have a high degree of usage, it would be more advantageous to forego the rebate and capture the LCFCs directly.

Charge Ready Program

Southern California Edison (SCE) has been authorized by the California Public Utility Commission (CPUC) to begin a pilot installation of 10 chargers at each of 150 locations within the SCE service territory. SCE will pay up to \$100,000 per site to connect the chargers. In order to qualify for the pilot a site must have at least 250 parking spaces. Program kick off was held May 18, 2016. ISD's County Office of Sustainability (COS) is evaluating potential County use.

SCAQMD- Electric Vehicle Charging and Solar Rebate Program 2016

On May 5, 2016, SCAQMD announced this program which is being provide through a Targeted Air Shed Grant from the U.S. Environmental Protection Agency. The targeted eligible area for Los Angeles County is Boyle Heights within four zip codes 90022, 90023, 90033, and 90063. On a first come first serve basis, the program states it will fund government organizations or non-profits up to \$7,500 per EVSE for up to five EVSE per site (\$37,500 total per site). Solar panels associated with EVSEs can add up to \$5,000 per site. However, the program manager clarified that this program is only in a pilot phase currently with a total budget of \$400,000. As a result, they will only be awarding grants for single chargers (dual or single plugs) per zip and W-9 tax ID. Based on the response to this pilot, they hope to secure more funding and expand the program as originally described. The program manager further advised that DHS will be awarded a grant for one dual EVSE charger to be installed at 5555 Ferguson, Commerce in 90022. Fire and Sheriff Departments are also working on applications for this grant program.

SCAQMD Funding Opportunity

The South Coast Air Quality Management District (SCAQMD) is expected to announce a funding opportunity in the Fall of 2016, which will include a dollar-for-dollar match for EVSE infrastructure. It is estimated that there it will be a \$500,000 limit in match funding for each participating local agency. COS will monitor this and other grant opportunities.

5. The potential for reduced gasoline consumption and CO₂ emissions from a higher purchasing requirement

On average, a non-emergency, older, internal combustion sedan uses over 400 gallons of fuel per year and an older light truck or van will use over 970 gallons of fuel.

The table below demonstrates the impact (in reduced fuel use and CO₂) of replacing these sedans with hybrids or PHEVs and replacing light trucks or vans with current, more efficient gasoline or CNG light trucks or vans.

Vehicle Type	Vehicle Fuel MPG	Annual Fuel Usage Per Vehicle	Fuel Savings Per Vehicle	Impact % Per Vehicle	CO ₂ Emissions lbs/gal	CO ₂ Reduction lbs/gal	Percentage
Sedans:							
Taurus/Malibu	21.6	403 gal	-	-	7,814	-	-
Prius - Hybrid	47	185 gal	218	54%	3,591	4,223	54%
Fusion - PHEV	71	123 gal	280	70%	2,377	5,437	70%
Vans & Light Trucks							
Existing Gas	11	973 gal	-	-	18,871	-	-
New Gas	14.5	738 gal	235	24%	14,316	4,555	24%
New CNG	14.5	GGE	235	24%	9,298	9,573	51%

Notes: Based on average mileage of 8,700 sedans and 10,700 vans/trucks
Lbs/gal CO₂ - 19.4 gas 12.6 CNG GGE - Gas Gallon Equivalent

The annualized impact (reduced fuel and CO₂) for replacing ten and one hundred vehicles by type are shown below, as well as, the impact over five years.

	Yearly Reduced Gallons	Yearly Reduced CO ₂	Five Years Reduced Gallons	Five Years Reduced CO ₂
<u>Impact for Every 10 Vehicles</u>				
Sedan to Hybrid	2,177	42,228	10,884	211,141
Sedan to PHEV	2,802	54,367	14,012	271,835
New Gas Van/Trk	2,348	45,550	11,740	227,752
New CNG Van/Trk	2,348	95,730	11,740	478,649
<u>Impact for Every 100 Vehicles</u>				
Sedan to Hybrid	21,767	422,283	108,836	2,111,413
Sedan to PHEV	28,024	543,671	140,121	2,718,353
New Gas Van/Trk	23,480	455,505	117,398	2,277,524
New CNG Van/Trk	23,480	957,298	117,398	4,786,489

6. A comparative analysis of TZEV, ZEV, and alternative fuel vehicle purchasing requirements in peer governmental agencies, including cities and counties

Below are the TZEV, ZEV, and alternative fuel vehicle purchasing requirements in peer governmental agencies, cities and counties or their related vehicle policy.

Government Agencies within California:

State of California

Governor Brown has directed State agencies to purchase at least 10 percent of all light-duty vehicles as ZEVs by 2015 and that by 2018 at least 25 percent of all light duty vehicles shall be ZEVs. The State directive does not apply to special performance requirements necessary for protection of public safety and welfare. Additionally, the State has provisions which allow PHEVs as an alternative.

City of Los Angeles, California

The City of Los Angeles is requiring that by 2017, 50 percent of replacement vehicles shall be TZEVs and that by 2025, 80 percent of replacement vehicles shall be ZEVs. Commitments were made for 128 TZEVs and 160 ZEVs in FY 2015-16.

City of San Diego, California

San Diego plans to increase the number of ZEVs to 50 percent by 2020 and having 90 percent of the fleet operate on alternative fuels by 2035.

Alameda County, California

Alameda County has directed that all vehicles purchased will be in the top 10 percent of fuel economy and be the lowest emissions within the vehicle class/type. The County also plans on limiting the purchase of traditional [gasoline only] sedans, SUVs and trucks, and instead purchase alternative fuel vehicles such as compressed natural gas, TZEVs and ZEVs.

Riverside County, California

County of Riverside policy for vehicle purchase is to encourage the use of low or zero emissions vehicles in order to improve air quality in the county and meet local and federal air quality regulations. The standard for light duty vehicle replacement is the purchase of hybrid models or other fuel efficient vehicles with an estimated EPA fuel

economy of 25 MPG minimum. The policy does not apply to heavy trucks nor fire engines.

City/County of San Francisco, California

City/County of San Francisco policy for fleet management and vehicle selection is stipulated in their Healthy Air and Clean Transportation Program. The policy states: Optimize the size and use of the city's vehicle fleet, use technology to promote the safe and environmentally-friendly use of vehicles, reduce average per-mile greenhouse gas emission from City fleet vehicles, and use car-sharing services.

To achieve its air pollution and greenhouse gas reduction goals, the City promotes the use of vehicles that have zero or super ultra-low emissions, achieve high energy efficiency and use alternative fuels with low carbon impact; implements policies to minimize the use of single occupancy vehicles and reduce the number of passenger vehicles and light duty trucks; encourages trip reduction, carpooling, and public transit, and increased bicycle commuting by providing cyclist with the opportunity to securely park their bicycles in or close to their workplaces.

San Diego County, California

San Diego County policy is to purchase standardized vehicles that are the most fuel-efficient and lowest emissions within the vehicle class/type which are commercially available, practical, and reasonably cost-competitive for the vehicle class/type needed for specific assignments. Current goals include transitioning two to five percent of light duty sedans to EV/PHEV by 2020 and 10 percent by 2025. Alternative fuels options for trucks include consideration of renewable diesel and CNG on a case-by-case basis which considers proximity to CNG fuel sites.

Government Agencies Outside of California:

City of New York, New York

New York plans on replacing 2,000 sedans with TZEVs and ZEVs. This is part of a plan to cut municipal vehicle emissions in half by 2025 and 80 percent by 2035.

City of Portland, Oregon

Portland plans on converting 20 percent of the overall City fleet to ZEVs electric by 2030 and replace all non-emergency sedans with ZEVs.

City of Seattle, Washington

Seattle plans on having 50 percent of all vehicle purchases comply with a green vehicle selection standard. They will also purchase or lease up to five hydrogen vehicles by 2020 if the fueling infrastructure is available and they will expand their alternative fuel truck fleet 15 percent by 2017.

Seattle is also working with vehicle manufacturers to develop a market-ready TZEV or ZEV patrol car and they plan on installing infrastructure for over 300 EVSE chargers in City fleet facilities by 2020.

City of Indianapolis, Indiana

Indianapolis will reduce their fleet size by 100 vehicles and upgrade 425 nonemergency vehicles to TZEVs and ZEVs over a 10 year period.

City of Atlanta, Georgia

Atlanta is leasing 50 TZEVs and ZEVs as part of their plan to reduce vehicle emissions by 20 percent by 2020.

Feasibility of Increasing the Purchasing Requirements for Clean Fuel Vehicles

There are a number of factors to consider in examining the feasibility of increasing the purchasing requirements for sedans. The following factors are considered to the degree possible in topics reviewed below:

- Incremental Cost
- Fuel Efficiency
- Emissions
- Operational Feedback from Departments

- A. Feasibility of increasing purchasing requirement for non-emergency sedans from 10 to 20 percent for Transitional Zero Emissions Vehicles-TZEV (e.g., plug-in hybrids) and Zero Emissions Vehicles-ZEV (e.g., electric, hydrogen, CNG).

Comparison of Purchasing Agreement pricing for standard hybrid versus PHEV:

Type	Type Detail	Make	Model	Fuel/ Type	Total Cost	Difference	Percentage Increase
Sedan	Hatchback	Toyota	Prius	Hybrid	\$25,593.26	\$8,092.03	32%
		Ford	CMAX	PHEV	\$33,685.29		
	Standard Sedan	Ford	Fusion	Hybrid	\$26,642.96	\$7,161.31	27%
		Ford	Fusion	PHEV	\$33,804.27		

Source: Purchasing Master Agreement

Comparisons for standard hybrid versus PHEV:

Vehicles	MPG	Range: All electric	CO ₂ Emissions	Basic Vehicle Warranty	Battery Warranty
2016 Prius	53 City/46 Hwy	n/a	170 grams/ mile	3 yrs/ 36,000 miles whichever occurs first	10 yrs/150,000 miles whichever occurs first
2016 CMAX PHEV	42 City/37 Hwy	19	129 grams/ mile	3 yrs/ 36,000 miles whichever occurs first	10 yrs/150,000 miles whichever occurs first
2016 Fusion – Hybrid	44 City/41 Hwy	n/a	209 grams/ mile	3 yrs/ 36,000 miles whichever occurs first	10 yrs/150,000 miles whichever occurs first
2016 Fusion - PHEV	43 City/41 Hwy 101 City/91 Hwy MPGe	19	129 grams/ mile	3 yrs/ 36,000 miles whichever occurs first	10 yrs/150,000 miles whichever occurs first
<i>Current Comparison</i> 2002 Ford Taurus	18 City/ 25 Hwy	n/a	444 grams/ mile	n/a	n/a

Operational Feedback from Departments

Overall, departments are concerned about two things regarding ZTEV and ZEV sedans: infrastructure and incremental costs. Insufficient EVSE infrastructure is of great concern for TZEV and ZEV growth. Many existing County EVSE sites (See Attachment IV) have high demand and many other sites do not yet have any EVSE infrastructure to support County fleet vehicles nor employees. Hence, departments would like to see more EVSE infrastructure built to be prepared for these types of vehicles. Additionally as the EVSE infrastructure grows, it must be determined if the County will begin to charge the public and employees for EVSE usage to help offset the costs of infrastructure installation, maintenance and replacement planning. This may also curb the current demand for free charging.

Regarding costs, the chart above provides a comparison of costs between standard hybrid vehicles and PHEVs. With an incremental cost ranging from \$7,200 - \$8,100 per PHEV vehicle, this equates to four hybrids for every three PHEVs. The current CARB Clean Car Rebates are a significant help to reduce the incremental cost for some vehicles; however, it is unclear how long the program will be funded.

Generally, it appears that increasing the purchasing requirement for sedans from 10% to 20% for TZEV or ZEV would be feasible if County EVSE infrastructure is also increased to support the increase of these vehicles to the County fleet. Grant funding does not appear to be a reliable source of funding for the EVSE infrastructure.

- B. Feasibility of increasing purchasing requirement for non-emergency trucks and vans from 10 to 20 percent to be Alternate Fueled Vehicles (e.g., electric, hydrogen, CNG, propane, etc.).

Comparison of Purchasing Agreement pricing for gasoline versus CNG trucks and vans:

Type	Type Detail	Make	Model	Fuel/Type	Total Cost	Difference	Percentage Increase
Van	12 Passenger	Ford	Transit	Gas	\$32,398.21	\$11,093.86	34%
		Ford	Transit	CNG	\$43,492.07		
	Cargo-9500 GVWR	Ford	Transit	Gas	\$30,309.01	\$11,548.11	38%
		Ford	Transit	CNG	\$41,857.12		
Truck	3/4 Ton GWVR 10,500	Ford	F350	Gas	\$30,478.65	\$12,518.10	41%
		Ford	F350	CNG	\$42,996.75		

Source: Purchasing Master Agreement

Comparisons for new gasoline fueled versus CNG for trucks and vans:

Vehicles	MPG	CO ₂ Emissions	Basic Vehicle Warranty
2016 Ford Transit 12 Passenger Van	15 City/19 Hwy	551 grams/mile	3 yrs/ 36,000 miles whichever occurs first
2016 Ford Transit 12 Passenger Van CNG	Same as above in GGE ⁽¹⁾		Same as above
2016 Ford Transit Cargo Van	15 City/19 Hwy	551 grams/mile	3 yrs/ 36,000 miles whichever occurs first
2016 Ford Transit Cargo Van CNG	Same as above in GGE ⁽¹⁾		Same as above
2016 Ford F350 Truck	14 City/20 Hwy	555 grams/mile	3 yrs/ 36,000 miles whichever occurs first
2016 Ford F350 CNG Truck	Same as above in GGE ⁽¹⁾		Same as above
Current Comparison 2002 F350 Truck	12 City/16 Hwy	635 grams/mile	n/a
Current Comparison 2002 Ford E350 Van	12 City/17 Hwy	634 grams/mile	n/a

(1) Notes regarding CNG vehicles.

- No distinction between cargo and passenger vans for any published fuel economy figures.

- Westport (www.westport.com) is the official provider of CNG conversions for Ford vehicles. While they do not publish fuel economy or emission ratings, they state the following in their published materials:
 1. Vehicles offer the same gasoline gallon equivalent (GGE) fuel economy as gasoline
 2. Both the Cargo Van and Passenger Wagon models of the dedicated CNG Transit 3.7L have been certified as Super Ultra Low Emission Vehicle (SULEV) in recognition of their emissions cutting abilities.
 3. Ford vehicle warranty remains intact.

Departments have several concerns about increasing the purchasing requirement from 10 to 20 percent for trucks and vans to be alternative fueled (e.g., CNG). These are:

- Vehicle manufacturers have limited offerings. This is likely due to the limited sales volume for this market, as well as the vehicle size and space requirements for the alternative fuel components. For example, there are no small trucks or vans (e.g., less than 9,500 GVWR) available that are CNG fueled.
- Insufficient CNG fueling sites – public or County. There is currently only one County CNG fuel site located near downtown Los Angeles, and a limited number of public CNG fuels sites. This creates a negative impact on logistical operations and efficiencies for County departments.
- Incremental costs are substantial – 34% - 41% more.
- County garage facilities are not currently equipped to handle CNG vehicle services and at least one fleet does not have CNG vehicle service agreements.
- Experiences within County operations have been mixed. Some departments have had significant difficulties with performance of CNG trucks for intended purpose and fueling down times; while the most recent arrivals are showing good preliminary results.

Generally, it appears that increasing the purchasing requirement for trucks and vans from 10 to 20 percent for CNG or other alternative fuels may not yet be feasible for all the above reasons. However, it is good to note that DPW has been working for several years to make a concerted effort to set up CNG fueling at two remote sites (with assistance from grant funding) in order to help transition their medium and heavy-duty truck fleet to alternative fuel (CNG). This assumes that the equipment manufacturers continue supporting this market.

ATTACHMENT II**Light Duty Vehicle Fleet Composition**

Light Duty Vehicles	Emergency	Non-Emergency	Total
Sedans	2,450	2,911	5,361
ISD Managed	411	919	1,330
Fire	92	174	266
Sheriff	1,947	1,660	3,607
Public Works	-	158	158
Vans	62	1,452	1,514
ISD Managed	12	894	906
Fire	-	44	44
Sheriff	50	405	455
Public Works	-	109	109
Trucks	317	2,598	2,915
ISD Managed	2	1,296	1,298
Fire	308	132	440
Sheriff	7	299	306
Public Works	-	871	871
SUVs	473	559	1,032
ISD Managed	12	172	184
Fire	125	-	125
Sheriff	336	387	723
Public Works	-	-	-
Total	3,302	7,520	10,822
ISD Managed	437	3,281	3,718
Fire	525	350	875
Sheriff	2,340	2,751	5,091
Public Works	-	1,138	1,138

Non-Emergency Light Duty Vehicle Composition

Light Duty Vehicles	Hybrid	TZEV	ZEV	Alternative Fuel *	Total Clean Fuels Units	Total Non-Emergency	Percentage Hybrid/ Clean Fuels
Sedans	626	15	3	37	681	2,911	23%
ISD Managed	463	12	3	33	511	919	56%
Fire	77	-	-	-	77	174	44%
Sheriff	11	-	-	2	13	1,660	1%
Public Works	75	3	-	2	80	158	51%
Vans	1	-	-	146	147	1452	10%
ISD Managed	-	-	-	144	144	894	16%
Fire	-	-	-	-	-	44	-
Sheriff	-	-	-	-	-	405	-
Public Works	1	-	-	2	3	109	3%
Trucks	2	-	-	145	147	2,598	6%
ISD Managed	1	-	-	128	129	1,296	10%
Fire	-	-	-	-	-	132	-
Sheriff	-	-	-	-	-	299	-
Public Works	1	-	-	17	18	871	2%
SUVs	26	-	-	17	43	559	8%
ISD Managed	26	-	-	17	43	172	25%
Fire	-	-	-	-	-	-	-
Sheriff	-	-	-	-	-	387	-
Public Works	-	-	-	-	-	-	-
Total	655	15	3	345	1,018	7,520	14%
ISD Managed	490	12	3	322	827	3,281	25%
Fire	77	-	-	-	77	350	22%
Sheriff	11	-	-	2	13	2,751	0.5%
Public Works	77	3	-	21	101	1,138	9%

Note: * = Alternative fuels including compressed natural gas, propane, E85-ethanol.

ATTACHMENT IV

**County of Los Angeles EVSE Infrastructure
As of June, 2016**

Department Name	Address (45 Locations)	EVSE Count	Current Count of Plugs (Chargers)
Beaches & Harbors	13560 Mindanao Way, Marina del Rey, CA 90292	1	2
Health Services Admin	5555 Ferguson Dr., Commerce, CA 90022	2	4
HS-Harbor/ UCLA Med Ctr	1000 W. Carson St., Torrance, CA 90502	2	4
HS-High Desert Health Center	335 E. Avenue I, Lancaster, CA 93535	2	4
HS-Lac/Usc Med Ctr	1214 N. Mission Rd., Los Angeles, CA 90033	2	4
HS-Mlk Med Ctr	1670 E. 120th. St., Los Angeles, CA 90059	1	2
HS-Olive View Hospital	14445 Olive View Drive, Sylmar, CA 91342	2	4
HS-Rancho Los Amigos	7601 E. Imperial Highway, Downey, CA 90242	3	5
Internal Services Dept.	1102 N. Eastern Ave., Los Angeles, CA 90063 (Lot 81)	2	4
	1104 N. Eastern Ave., Los Angeles, CA 90063 (Fleet)	2	4
	1110 N. Eastern Ave., Los Angeles, CA 90063	2	4
	115 S. Grand Ave., Los Angeles, CA 90012 (Lot 16)	3	6
	140 N Grand Ave., Los Angeles, CA 90012 (Lot 18 - Fleet)	6	8
	140 N. Grand Ave., Los Angeles, CA 90012 (Lot 18L)	2	4
	140 N. Grand Ave., Los Angeles, CA 90012 (Lot 18U)	2	4
	145 N. Broadway, Los Angeles, CA 90012 (Lot 10)	2	4
	318 W. Adams Blvd., Los Angeles, CA 90007 (Lot 46)	1	2
	523 Shatto Pl., Los Angeles, CA 90020 (Lot 68)	2	4
	7515 Van Nuys Blvd., Van Nuys, CA 91405 (Lot 96A)	6	6
Internal Services Dept. (Cont.)	313 N. Figueroa, Los Angeles, CA 90012 (Lot 29)	2	4
	1703 Mountain Ave., Monrovia, CA 91016 (Fleet)	1	2
	45000 N. 60th St. West, Lancaster, CA 93536 (Fleet)	1	1
MUSIC CENTER (Managed By ISD)			
	135 N. Grand Ave., Los Angeles, CA 90012 (Lot 14)	3	3
	135 N. Grand Ave., Los Angeles, CA 90012 (Lot 14) Level 3	3	3
Parks & Recreation	301 N. Baldwin Ave., Arcadia, CA 91007	3	3
Probation	9150 Imperial Hwy., Downey, CA 90242	1	2
Public Works	900 S. Fremont Ave., Alhambra, CA 91803	7	8
	901 S. Fremont Ave., Alhambra, CA 91803	3	3
	1537 Alcazar St., Los Angeles, CA 90033	8	8

Department Name	Address (45 Locations)	EVSE Count	Current Count of Plugs (Chargers)
Registrar-Recorder/ Co Clerk	12400 E. Imperial Highway, Norwalk, CA 90650	3	3
Sheriff	1104 N. Eastern Ave., Los Angeles, CA 90063 (Fleet)	2	2
	11705 S. Alameda, Lynwood, CA 90262	1	2
	1275 N. Eastern Ave., Los Angeles, CA 90063	1	2
	21695 Valley Blvd., Walnut, CA 91789	1	2
	23740 Magic Mtn. Pkwy., Santa Clarita, CA 91355	2	2
	270 S. Walnut Ave., San Dimas, CA 91773	1	2
	27050 Agoura Rd., Agoura, CA 91301	1	2
	4700 Ramona Blvd., Monterey, CA 91745 (HQ)	1	2
	780 San Vicente Blvd., West Hollywood, CA 90069	1	2
	8838 Las Tunas Dr., Temple City, CA 91780	1	2
	MCJ 441 E. Bauchet, Los Angeles, CA 90012	2	2
	TTCJ 450 E. Bauchet, Los Angeles, CA 90012	2	2
	29320 The Old Rd., Castaic, CA 91384	2	4
Museum Of Art	5905 Wilshire Ave., Los Angeles, CA 90036	3	3
Natural History Museum	900 Exposition Blvd., Los Angeles, CA 90007	4	4
Grand Totals		105	154